

REMARKS

Claims 1 through 3 and 5 through 13 are pending, of which claim 1 is independent.

Favorable reconsideration and further examination are respectfully requested.

Claims 12 and 13 were rejected under 35 U.S.C. §112, second paragraph. The Office Action (page 2) states that “[T]he term ‘substantially constant’ in claim 12 is a relative term which renders the claim indefinite.” As shown above, Applicants have amended claim 12 to remove the term “substantially constant” and replace that term with “monotonically increasing.” In view of the foregoing amendments, Applicants request reconsideration and withdrawal of the rejection of claims 12 and 13 under 35 U.S.C. §112, second paragraph.

Claims 1, 2, 5-7, and 9 were rejected as being anticipated by U.S. Patent No. 4,627,160 (Herron); claim 6 was rejected as anticipated by or, in the alternative, as obvious over Herron. As shown above, Applicant has amended independent claim 1 to recite that a first layer of the stack comprises a first ceramic material, and a second layer of the stack comprises a second ceramic material having a relative permittivity which is at least two times as high as a relative permittivity of the first ceramic material. In view of these amendments, withdrawal of the art rejections is respectfully requested.

Herron describes “[a] method of fabricating glass-ceramic substrate carriers ... wherein an improved technique is provided for removing the resin binder from the structure without degrading the internal metallurgy system and/or glass-ceramic.” (See, e.g., Herron at col. 1, lines 13-18). According to Herron, “a catalyst can be added to glass-ceramic material in a process of producing a laminate structure ... that will greatly facilitate removal of the binder resin during the burn-off phase.” (See, e.g., id. at col. 3, lines 46-49). To demonstrate the effectiveness of

resin binder removal at low temperatures from a glass-ceramic material embodying a Cu catalyst, Herron assembled sheets of uncatalyzed material with sheets of catalyze material to form substrates "having alternating layers ~40 mils in thickness of catalyzed and uncatalyzed layers." (See, e.g., id. at col. 5, line 51- col. 6, line 46). However, Herron fails to disclose or suggest "a ceramic substrate comprised of a base that comprises a stack of layers ... wherein a first layer of the stack comprises a first ceramic material, and a second layer of the stack comprises a second ceramic material having a relative permittivity which is at least two times as high as a relative permittivity of the first ceramic material." In fact, Herron does not mention the relative permittivity of the glass-ceramic materials at all. Furthermore, there is no suggestion that the very low concentration (i.e., 10 to 30,000 parts/million, or 0.01-3.0% by weight of the glass-ceramic) of the catalyst would effect the relative permittivity of the catalyzed layers, as compared to the uncatalyzed layers, so as to provide such an arrangement. Nor does Herron indicate that such an arrangement would be in any way beneficial. Nor would a person of ordinary skill in the art have had any reason to modify Herron's glass-ceramic substrates in a way to provide such an arrangement.

This is not merely a trivial distinction. As noted in Applicants' specification, for example, it is advantageous if the materials of layers stacked on top of one another in the stack are different and the stack, therefore, contains at least two different ceramic materials. (See, e.g., Specification at page 6, lines 7-14). This makes it possible to produce ceramic substrates that contain high capacity capacitors. (See, e.g., id.). Accordingly, claims 1, 2, 5-7, and 9 are believed to be patentable.

Claim 3 was rejected over Herron in view of U.S. Patent No. 5,252,519 (Nakatani).

Claim 3 depends from claim 1, and thus is patentable for at least the reasons discussed above.

Nakatani, relied on for its alleged teaching of a metal conductor paste that includes a silver-palladium mixture, does not remedy the deficiencies of Herron, as discussed above. Therefore, Applicants respectfully request that the rejection of claim 3 over Herron in view of Nakatani be withdrawn.

Claim 10 was rejected over Herron in view of U.S. Publication No. 2001/0022416 (Harada). Claim 10 depends from claim 1, and thus is patentable for at least the reasons discussed above. Harada, relied on for its alleged teaching of heating processes for debinding and sintering that are carried out in air, does not remedy the deficiencies of Herron, as discussed above. Therefore, Applicants respectfully request that the rejection of claim 10 over Herron in view of Harada be withdrawn.

Claims 11-13 were rejected over Herron in view of Harada and U.S. Patent No. 5,230,846 (Tamhankar). Claims 11-13 depend from claim 1, and thus are patentable for at least the reasons discussed above. Tamhankar describes the heat treatment of multilayered ceramic/glass composites formed from ceramic green sheets. (See, e.g., Tamhankar at col. 5, lines 13-14). Tamhankar, relied on for its alleged teaching of performing a switch between an inert environment and an air environment during a reduction in temperature from a maximum debinding temperature to a lower temperature that is equal to or greater than the starting debinding temperature, does not remedy the deficiencies of Herron, as discussed above. Therefore, Applicants respectfully request that the rejections of claims 11-13 over Herron in view of Harada and Tamhankar be withdrawn.

Each of the dependent claims is believed to define patentable features of the invention. Each dependent claim partakes of the novelty of its corresponding independent claim, in light of the foregoing amendments, and, as such, has not been discussed specifically herein.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

In view of the foregoing amendments and remarks, Applicant respectfully submits that the application is in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

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overpayment, to deposit account 06-1050, referencing Attorney Docket No. 14219-074US1.

Respectfully submitted,

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